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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/734,451	12/12/2003	Lexing Xie	MERL-1465	9682

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MITSUBISHI ELECTRIC RESEARCH LABORATORIES, INC.
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EXAMINER

CUNNINGHAM, GREGORY F

ART UNIT	PAPER NUMBER
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2624

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/06/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/734,451

Applicant(s)

XIE ET AL.

Examiner

Greg F. Cunningham

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12/12/2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

1. This action is responsive to communications of application received 12/12/2003.
2. The disposition of the claims is as follows: claims 1 - 7 are pending in the application.

Claim 1 is the only independent claim.

3. The group and/or Art Unit location of your application has changed. To aid in the correlation of any papers for this application, all further correspondence should be directed to Group Art Unit 2624 (effective 03/07). Please be sure to use the most current art unit number on all correspondence to help us route your case and respond to you in a timely fashion.
4. When making claim amendments, the applicant is encouraged to consider the references in their entireties, including those portions that have not been cited by the examiner and their equivalents as they may most broadly and appropriately apply to any particular anticipated claim amendments.

Specification

5. The disclosure is objected to because of the following informalities: On page 5 of the specification, reference is given to Figure 2A in second line of paragraph [018]. Reference is also made to Figures 2A-2B in fourth line of paragraph [020]. Yet there are no Figures 2A nor 2B labeled in the drawings.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shibata et al., (US 20020061136 A1), hereinafter Shibata, and further in view of Choi, (US 20020042793 A1).

A. Shibata discloses claim 1, “A method for learning a structure of a video to detect events in the video consistent with the structure, comprising:

selecting sets of features from the video [para. 0017 and 0109, corresponding to feature amounts suitable to select a set of feature amounts];

updating a hierarchical statistical model for each set of features [para. 0031, Fig. 1 is a schematic view showing a hierarchical model of video data; and para. 0052, see Fig. 1];

evaluating an information gain of the hierarchical statistical model [para. 0104, corresponding to ‘extracts a statistic representative value of an entire segment ... n-dimensional vector ... histogram and a power spectrum are involved; para. 0105 - 0106];

filtering redundant features [para. 0101 corresponds to ‘determines the extraction number of features amounts by balancing maximization of the fidelity and minimization of the data redundancy in the segment representation’];

updating the hierarchical statistical model based on the filtered features [para. 0104 - 0107, corresponding to ‘method of forming a dissimilarity measurement criterion for a feature

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amount representative of an extracted dynamic feature is based on the dissimilarity measurement criterion for the static feature amount on which the dynamic feature amount is based.'];

applying a Bayesian information criteria to each model and feature set pair; and

rank ordering the model and feature set pairs to learn the structure and detect the events in the video in an unsupervised manner” supra [as detailed].

However, Shibata does not appear to disclose “applying a Bayesian information criteria to each model and feature set pair [Choi: Abstract, para. 0002 - 0005, 0023 – 0027, 0032, 0034, 0051, 0079, 0099, 0173, 0196 – 0197, corresponding to ‘Bayesian self-organizing feature maps (SOM)’, and ‘Bayesian statistical technique’]; and rank ordering the model and feature set pairs to learn the structure and detect the events in the video in an unsupervised manner [Choi: Abstract, para. 0002 - 0005, 0023 – 0027, 0032, 0034, 0051, 0079, 0099, 0173, 0196 – 0197, corresponding to ‘order-rank document clusters ... is a type of an unsupervised learning’]”, but Choi does [as detailed].

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply ‘feature amounts, hierarchical model of video data, statistic representative value of an entire segment and minimization of the data redundancy disclosed by Shibata in combination with ‘Bayesian self-organizing feature maps (SOM)’, and ‘Bayesian statistical technique’ disclosed by Choi, and motivated to combine the teachings because Shibata is directed toward audio visual signal processing of video data, and although Choi is directed toward performing real-time document clustering for relevant documents in accordance with a degree of semantic similarity , Choi would improve the accuracy of information retrieval via performing real-time clustering for relevant information as revealed in para. 0002.

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B. Shibata and Choi disclose claim 2, “The method of claim 1, in which the hierarchical statistical model uses Gaussian mixtures” supra for claim 1 and furthermore by Choi in para. 0029 corresponding to ‘Gaussian distribution’.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply ‘feature amounts, hierarchical model of video data, statistic representative value of an entire segment and minimization of the data redundancy disclosed by Shibata in combination with ‘Bayesian self-organizing feature maps (SOM)’, ‘Bayesian statistical technique’ and ‘Gaussian distribution’ disclosed by Choi, and motivated to combine the teachings because Shibata is directed toward audio visual signal processing of video data, and although Choi is directed toward performing real-time document clustering for relevant documents in accordance with a degree of semantic similarity , Choi would improve the accuracy of information retrieval via performing real-time clustering for relevant information as revealed in para. 0002.

(Examiner’s note: Also see IDS reference: “Discovering Recurrent Events In Video Using Unsupervised Methods”, section (3.2 Movies Videos), ‘Each state emits observations using Gaussian mixture model (GMM)’.)

8. Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shibata et al., (US 20020061136 A1), hereinafter Shibata, in view of Choi, (US 20020042793 A1), and further in view of Lin et al., (US 7,076,102 B2), hereinafter Lin, or Ozer et al., (US 2004/0120581 A1), hereinafter Ozer, and/or Sterz, Walter et al., (DE 10122212 C1), hereinafter Sterz.

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A. Shibata and Choi disclose claim 3, “The method of claim 1, in which the hierarchical statistical model uses hidden Markov models” supra for claim 1. However they do not appear to disclose “in which the hierarchical statistical model uses hidden Markov models”. But Lin does in col. 1, lns. 64-67, at ‘For example, probabilistic techniques, such as Hidden Markov models (HMMs) and Bayesian networks, have been used extensively to recognize complex motion patterns and to learn and recognize human activities’ or

Ozer does in para. [0036] and [0066] corresponding to ‘Hidden Markov Models’ and/or Sterz does in front page corresponding to ‘Hidden Markov Models’.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply ‘feature amounts, hierarchical model of video data, statistic representative value of an entire segment and minimization of the data redundancy disclosed by Shibata in combination with ‘Bayesian self-organizing feature maps (SOM)’, and ‘Bayesian statistical technique’ disclosed by Choi, and motivated to combine the teachings because Shibata is directed toward audio visual signal processing of video data, and although Choi is directed toward performing real-time document clustering for relevant documents in accordance with a degree of semantic similarity , Choi would improve the accuracy of information retrieval via performing real-time clustering for relevant information as revealed in para. 0002., coupled with Hidden Markov Models disclosed by Lin, Ozer or Sterz and motivated to couple the teachings because they all similarly classified as related art according to Current US and US Cross Reference Classifications.

B. Shibata, Choi, Lin or Ozer, and Sterz disclose claim 4, “The method of claim 3, in which states of events in the video are modeled as low-level hidden Markov models in the hierarchical

hidden Markov model, and the events are modeled as a high-level Markov chain in the hierarchical hidden Markov model” supra for claim 3, and furthermore by Lin in col. 1, lns. 64-67 at ‘For example, probabilistic techniques, such as Hidden Markov models (HMMs) and Bayesian networks, have been used extensively to recognize complex motion patterns and to learn and recognize human activities’, wherein ‘complex motion patterns’ and ‘human activities’ correspond to “high-level Markov chains” (i.e. state transitions: golf video -> tee shot -> pan -> ball through air -> lands and rolls on fairway - specification para. 0003); or furthermore by Ozer in para. [0036] and [0066] at ‘movements’ (of body object parts) determined by ‘Hidden Markov Models’, wherein ‘movements’ (of body object parts) also corresponds to “high-level Markov chains” (i.e. state transitions: golf video -> tee shot -> pan -> ball through air -> lands and rolls on fairway - specification para. 0003); and

furthermore by Sterz in front page at ‘Training model for pattern recognition, especially Hidden-Markov model, involves defining displacement between related training patterns by correlating patterns so that correlation is maximal’ wherein ‘displacement between related training patterns’ corresponds to “states of events in the video are modeled as low-level hidden Markov models” (i.e. color schemes, texture patterns, or motion – specification para. 0003).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply ‘feature amounts, hierarchical model of video data, statistic representative value of an entire segment and minimization of the data redundancy disclosed by Shibata in combination with ‘Bayesian self-organizing feature maps (SOM)’, and ‘Bayesian statistical technique’ disclosed by Choi, and motivated to combine the teachings because Shibata is directed toward audio visual signal processing of video data, and although Choi is directed

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toward performing real-time document clustering for relevant documents in accordance with a degree of semantic similarity, Choi would improve the accuracy of information retrieval via performing real-time clustering for relevant information as revealed in para. 0002., coupled with Hidden Markov Models disclosed by Lin, Ozer or Sterz and motivated to couple the teachings because they all similarly classified as related art according to Current US and US Cross Reference Classifications.

9. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shibata et al., (US 20020061136 A1), hereinafter Shibata, in view of Choi, (US 20020042793 A1), and further in view of Official notice.

A. Shibata and Choi disclose claim 5, “The method of claim 1, in which the features include dominant color ratios, motion intensity, a least-square estimates of camera translation, audio volume, spectral roll-off, low-band energy, high-band energy, zero-crossing rate (ZCR)” supra for claim 1. However, they do not appear to disclose, “in which the features include dominant color ratios, motion intensity, a least-square estimates of camera translation, audio volume, spectral roll-off, low-band energy, high-band energy, zero-crossing rate (ZCR)”, but Official notice is taken that the art is replete with features that include dominant color ratios, motion intensity, a least-square estimates of camera translation, audio volume, spectral roll-off, low-band energy, high-band energy, zero-crossing rate (ZCR).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply ‘feature amounts, hierarchical model of video data, statistic representative value of an entire segment and minimization of the data redundancy disclosed by Shibata in combination with ‘Bayesian self-organizing feature maps (SOM)’, and ‘Bayesian

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statistical technique' disclosed by Choi, and motivated to combine the teachings because Shibata is directed toward audio visual signal processing of video data, and although Choi is directed toward performing real-time document clustering for relevant documents in accordance with a degree of semantic similarity, Choi would improve the accuracy of information retrieval via performing real-time clustering for relevant information as revealed in para. 0002, and further coupled with "features that include dominant color ratios, motion intensity, a least-square estimates of camera translation, audio volume, spectral roll-off, low-band energy, high-band energy, zero-crossing rate (ZCR)" disclosed by Official notice.

For instance see IDS reference: "Structure Analysis of Soccer Video With Hidden Markov Models", first paragraph at 'dominant color ratio and motion intensity, based on the special syntax and content characteristics of soccer videos'.

10. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shibata et al., (US 20020061136 A1), hereinafter Shibata, in view of Choi, (US 20020042793 A1), and further in view of Bremer et al., (US 2005/0176057 A1), hereinafter Bremer.

A. Shibata and Choi disclose claim 6, "The method of claim 1, in which the features are filtered with a Markov blanket" supra for claim 1. However, they do not appear to disclose, "in which the features are filtered with a Markov blanket", but Bremer does in para. [0028] at 'Preferred feature selection algorithms include, but are not limited to, Forward or Backward Floating, SVMs, Markov Blankets, Tree Based Methods with node discarding, Genetic Algorithms, Regression-based methods, kernel-based methods, and filter -based methods.'

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply 'feature amounts, hierarchical model of video data, statistic

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representative value of an entire segment and minimization of the data redundancy disclosed by Shibata in combination with 'Bayesian self-organizing feature maps (SOM)', and 'Bayesian statistical technique' disclosed by Choi, and motivated to combine the teachings because Shibata is directed toward audio visual signal processing of video data, and although Choi is directed toward performing real-time document clustering for relevant documents in accordance with a degree of semantic similarity, Choi would improve the accuracy of information retrieval via performing real-time clustering for relevant information as revealed in para. 0002, and further coupled with Markov Blanket filter-based method disclosed by Bremer and motivated to couple the teachings because although the field of art seems unrelated it actually is related in the sense of feature selection as applied to a training set comprising patients and their associated values.

11. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shibata et al., (US 20020061136 A1), hereinafter Shibata, in view of Choi, (US 20020042793 A1), and further in view of Altschuler et al., (US 6,012,052), hereinafter Altschuler.

A. Shibata and Choi disclose claim 7, "The method of claim 1, in which the evaluating is performed using expectation maximization and a Markov chain Monte Carlo method" supra for claim 1. However, they do not appear to disclose, "in which the evaluating is performed using expectation maximization and a Markov chain Monte Carlo method", but Altschuler does in col. 12, lns. 10-13 at 'Alternatively, the number of clusters specified may be averaged over or estimated using known statistical methods such as reversible jump Markov Chain Monte Carlo algorithms' and in col. 14, lns. 57-61 and in col. 16, lns. 10-19 at 'Expectation Maximization (or "EM") algorithm'.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply 'feature amounts, hierarchical model of video data, statistic representative value of an entire segment and minimization of the data redundancy disclosed by Shibata in combination with 'Bayesian self-organizing feature maps (SOM)', and 'Bayesian statistical technique' disclosed by Choi, and motivated to combine the teachings because Shibata is directed toward audio visual signal processing of video data, and although Choi is directed toward performing real-time document clustering for relevant documents in accordance with a degree of semantic similarity , Choi would improve the accuracy of information retrieval via performing real-time clustering for relevant information as revealed in para. 0002, and further coupled with 'Markov Chain Monte Carlo algorithms' and "Expectation Maximization (or "EM") algorithm' disclosed by Altschuler and motivated to couple the teachings because the methods to pre-fetch resources and build resource link topology templates may also be used for collaborative filtering as disclosed by Altschuler in col. 3, lns. 60-67.

Responses

12. Responses to this action should be mailed to: Commissioner of Patents and Trademarks, Washington, D.C. 20231.

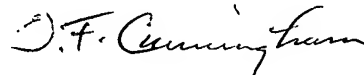
Inquiries

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregory F. Cunningham whose telephone number is (571) 272-7784.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matt Bella can be reached on (571) 272-7778. The Central FAX Number for the organization where this application or proceeding is assigned is **571-273-8300**.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Gregory F. Cunningham
Examiner, Art Unit 2624

gfc

3/27/2007



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